

Patent Claims:

1. Method for identifying hydraulic defects in electrohydraulic brake systems for motor vehicles including an electronic regulation and control unit (16), wheel brakes (7, 8) equipped with inlet valves (17, 18) and outlet valves (27, 28), and at least one pressure source,  
characterized by the following process steps:
  - o Identification of a defect pattern by comparing several hydraulic and electric nominal values with the actual values measured by sensors in the electronic regulation and control unit (16);
  - o Selection of a testing routine which corresponds to the defect pattern and execution thereof;
  - o Localization of the individual defect causing the defect pattern;
  - o Selection of an operating mode which takes into account the individual causing defect and operation of the brake system in this operating mode.
2. Method as claimed in claim 1,  
characterized in that different priorities are assigned to the defect patterns, and in that a coordinated termination of the momentarily performed testing routine is arranged for when a defect pattern with a higher priority appears.

3. Method as claimed in claim 1 or 2,  
characterized in that a coordinated  
termination of the momentarily performed testing  
routine is arranged for in the event of an interaction  
of the operator.
4. Method as claimed in claims 2 and 3,  
characterized in that the coordinated  
termination is performed by making the brake system  
adopt the same condition as before the commencement of  
the testing routine that is to be stopped.
5. Method as claimed in any one of claims 1 to 4,  
characterized in that the testing routine  
checks the hydraulic components which are associated  
with a defect pattern in terms of their operability, or  
modifies control strategies in order to find the  
individual causing defect.
6. Method as claimed in claim 5,  
characterized in that the testing  
routines run without being noticed by the operator and  
maintain the maximum possible braking power, or are  
alternatively performed when the motor vehicle is in a  
condition in which the effects of the testing routines  
performed will not induce any dangerous driving  
situation.
7. Method as claimed in claim 1,  
characterized in that after the  
successful localization of the individual causing

defect, additional, newly identified defect patterns are processed.

8. Method as claimed in claim 1, characterized in that after an abortive localization of the individual causing defect, a limited quantity of individual defects will be taken into account by an operating mode until an appropriate testing situation is available to localize the individual causing defect.
9. Method as claimed in any one of the preceding claims, characterized in that the defect pattern is represented by an actual pressure value ( $p_{actual}$ ) measured by a pressure sensor (19, 30, 31, 35) and differing in at least one wheel brake (7, 8) from a preset nominal pressure value ( $p_{nominal}$ ).
10. Method as claimed in any one of claims 1 to 9, characterized in that the defect pattern is represented by a volume input in at least one wheel brake (7, 8) which exceeds the volume input that is predetermined by the constructive design of the wheel brake (7, 8).
11. Method as claimed in any one of claims 1 to 9, characterized in that the defect pattern is represented by a rising pressure value in at least one wheel brake (7, 8) in the absence of a braking request of the driver.

12. Method as claimed in any one of claims 1 to 9, characterized in that the pressure source is a high-pressure accumulator (21), and in that the defect pattern is represented by a declining volume in the high-pressure accumulator (21), with the inlet valves (17, 18) being simultaneously closed.
13. Method as claimed in any one of claims 1 to 9, characterized in that the pressure source is a hydraulic motor-and-pump-assembly (20), and in that the defect pattern is represented by a deviation of the measured performance under load from the predetermined performance under load or by an insufficient feed performance of the hydraulic motor-and-pump assembly (20).
14. Method as claimed in any one of claims 1 to 9, characterized in that the pressure source is a master brake cylinder (2) with at least one piston (9, 10), and in that the defect pattern is represented by a deviation of the actual pressure value determined in the master brake cylinder compared to the nominal pressure value that is expected on account of the measured displacement travel of the piston (9).
15. Electrohydraulic brake system for motor vehicles including an electronic regulation and control unit (16), wheel brakes (7, 8) equipped with inlet valves (17, 18) and outlet valves (27, 28), and at least one pressure source,  
characterized in that

- Means are provided to identify a defect pattern by comparing several hydraulic and electric nominal values with the actual values measured by sensors in the electronic regulation and control unit (16), and that;
- Additional means are provided for the selection of a testing routine which corresponds to the defect pattern and execution thereof, and that;
- Additional means are provided for the localization of the individual defect causing the defect pattern, and that;
- Additional means are provided for the selection of an operating mode which takes into account the individual causing defect, and for the operation of the brake system in this operating mode.

16. Electrohydraulic brake system as claimed in claim 15, characterized in that additional means are provided which assign different priorities to the defect patterns and perform a coordinated termination of the momentarily performed testing routine when a defect pattern with a higher priority appears.

17. Electrohydraulic brake system as claimed in claim 15, characterized in that the means perform the coordinated termination by making the brake system adopt the same condition as before the commencement of the testing routine that is to be stopped.

18. Electrohydraulic brake system as claimed in any one of claims 15 to 17,  
characterized in that the means perform active tests in the brake system or modify control strategies in order to find the individual causing defect.